

EDITORIAL

ON THE IMPORTANCE OF MONOGENEAN HELMINTHES IN BRAZILIAN CULTURED NILE TILAPIA

LA IMPORTANCIA DE LOS HELMINTOS MONOGENEOS EN EL CULTIVO DE TILAPIA DEL NILO EN BRASIL

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There's still a lot of ongoing debate whether the correct taxonomical nomenclature should be Monogenea or Monogenoidea. In this current note it will be addressed as Monogenea, since it's the most traditional (Wheeler & Chisholm, 1995), and therefore most known nomenclature. But the authors would like to point that we support the use of Monogenoidea for its phylogenetic approach.

Monogenea is the denomination of a class of parasitic flukes belonging to the Platyhelminthes phylum. They are divided over more than 50 families with thousands of described species. Some estimation presumes that there is at least one species of Monogenea for every species of fish. Most species are highly host specific, having no more than one host, but some are reported to be generalist (Eiras, 1994).

They are found both in marine and freshwater fishes, where they can act as ectoparasites on skin and gills, feeding on mucus, skin cells and blood, or as endoparasites in stomach. They attach themselves to hosts using a structure called haptor, located in the posterior region, and feed using an anterior oral sucker.

These parasitic flatworms lack respiratory, skeletal and circulatory systems but have a complex reproductive system. They are hermaphroditic, mostly with a direct life cycle, being either oviparous or viviparous. Viviparous Monogenea can host several generations inside them, awarding them the nickname of "russian dolls" (Bakke *et al.*, 2007). Because of their life cycle, they proliferate very quickly in environments with high host densities, such as fish tanks or ponds (Takemoto *et al.*, 2004).

They are important fish disease agents, being responsible for many mass mortalities events

around the world, especially in the aquaculture industry, but sometimes even in natural environment, such as the mass mortality of the anchovy *Engraulis japonica* Temminck & Schlegel, 1846 in the Sea of Iyo, which killed over 87,000 fish (Yamamoto *et al.*, 1984).

Histology studies show that on the gills, they induce an excessive mucus production, hyperplasia and can lead to fusion of gills lamellae, causing mortality, especially under poor environmental conditions such as low oxygen content (Molnár, 1994; Pavanelli *et al.*, 2002). In Brazil, Martins & Romero (1996) have reported that in severe infestations caused hyperplasia in the primary lamellae, necrosis, edema, respiratory epithelium displacement, ruptured pillar cells and telangiectasis.

Nile tilapia is one of the most cultured fishes in the world with more than 2 million tonnes produced worldwide (FAO, 2009). In Brazil, it's the most produced freshwater fish, reaching over 70 thousand tonnes per year, which corresponds to 26% of the national aquaculture production (Boscardin, 2008).

Monogenea are among the major parasites on Nile tilapia, even though in Brazil there are few cases of mass mortalities caused by high Monogenea infestations, they are responsible for significant economical losses, since in most cases the host shows a decrease in the respiratory and growth rate (Martins & Romero, 1996).

The following Monogenea species have currently been described in cultured Nile tilapia in Brazil: ectoparasitic *Cichlidogyrus sclerosus* Papaloapanerna y Thurston, 1969, *Cichlidogyrus halli* Price & Kirk, 1967, *Cichlidogyrus thurstonae* Ergens, 1981, *Scutogyrus longicornis* Paperna &

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Thurston, 1969 (Monogenoidea: Dactylogyridae) and endoparasitic *Enterogyrus cichlidarum* P a p e r n a , 1 9 6 3 (M o n o g e n o i d e a : Ancyrocephalidae). (Jerônimo, 2009)

In Brazil, the major groups that work with Monogenea helminthes are located in Rio Grande do Sul, Santa Catarina, Paraná, São Paulo, Rio de Janeiro, Mato Grosso do Sul, Piauí, Amazônia, Pará, Amapá. However, not every group work with quantification and fewer are the ones who work with cultured Nile tilapia, which restricts the available data over Monogenean helminthes in cultured Nile tilapia to three main states: São Paulo, Paraná and Santa Catarina.

A problem that hinders the development of quantification studies and makes it harder for data comparison is the lack of standardization over the quantification methods and parameters for Monogenea. Therefore, some efforts should be made towards a national standard procedure for quantification parameters and methods.

The following graphics (Figure 1-2) represents the data over prevalence rates and mean infestation intensities for Monogenea gathered from 20 papers that studied the parasitic fauna in cultured Nile tilapia.

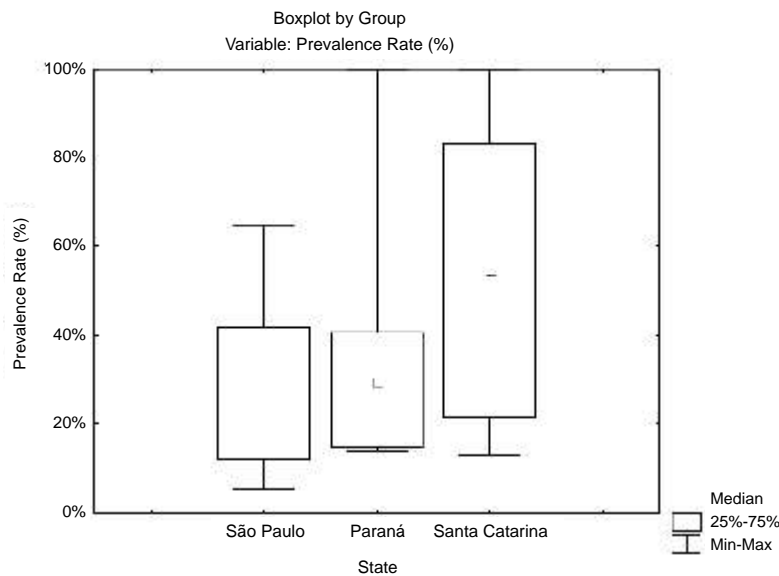


Figure 1. Boxplot graphic for prevalence rate of Monogenea in cultured Nile tilapia, based on a review over 20 papers, Brazil, 2009.

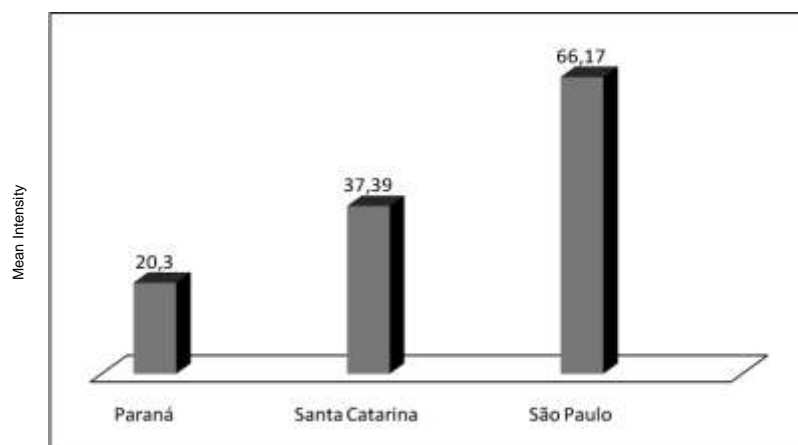


Figure 2. Mean intensity of Monogenea in cultured Nile tilapia, based on a review over 20 papers, Brazil, 2009.

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